UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/488,690	06/05/2012	Shinji Uchida	FEC 421	6539

23995 7590 04/14/2017

Rabin & Berdo, PC
1101 14TH STREET, NW
SUITE 500
WASHINGTON, DC 20005

EXAMINER
CHAU, LISA N

ART UNIT	PAPER NUMBER
1785	

NOTIFICATION DATE	DELIVERY MODE
04/14/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

firm@rabinberdo.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHINJI UCHIDA

Appeal 2016-005454
Application 13/488,690[1]
Technology Center 1700

Before KAREN M. HASTINGS, BRIAN D. RANGE and MERRELL C. CASHION, JR., *Administrative Patent Judges*.

CASHION, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1–5. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

---

[1] The real party in interest is identified as Fuji Electric Co, Ltd. App. Br. 2.

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

> 1. A magnetic recording medium for use on a nonmagnetic substrate, comprising:
>
> a magnetic recording layer; and
>
> a soft magnetic underlayer that has a stacked structure and that includes a soft magnetic layer on a nonmagnetic substrate side, an exchange coupling control layer, and a soft magnetic layer on a magnetic recording layer side,
>
> wherein the soft magnetic layer on the magnetic recording layer side has a higher relative permeability characteristic frequency than the soft magnetic layer on the nonmagnetic substrate side, and the soft magnetic layer on the nonmagnetic substrate side has a higher relative permeability than the soft magnetic layer on the magnetic recording layer side,
>
> wherein the relative permeability characteristics frequency is the frequency at which the relative permeability is reduced by 50% compared with the relative permeability at 10 MHz, and
>
> wherein the exchange control coupling layer is in contact with both the soft magnetic layer on the nonmagnetic substrate side and the soft magnetic layer on the magnetic recording layer side.

Appellant requests review of the Examiner's rejection of claims 1–5 rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as unpatentable over Matsumoto (US 2007 /0087226 A1, published April 19, 2007). Final Act. 3; App. Br. 3.

Appellant presents arguments for independent claim 1 and dependent claim 5 only. *See* Appeal Brief, *generally*. Accordingly, we select claim 1 as representative of the subject matter before us on appeal. Claims 2–4 stand or fall with claim 1. Claim 5 will be addressed separately.

OPINION

Prior Art Rejection under 35 U.S.C. § 102(b)

Claim 1

After review of the respective positions provided by Appellant and the Examiner, we AFFIRM the Examiner's rejection of representative claim 1 for the reasons presented by the Examiner. We add the following for emphasis.

Claim 1 is directed to a magnetic recording medium for use in a hard disk drive that stores data using perpendicular recording. App. Br. 2–3.

The Examiner found Matsumoto describes a magnetic recording medium for use on a nonmagnetic substrate having a magnetic recording layer and a soft magnetic underlayer (SUL), where the structure of the SUL comprises two soft magnetic layers in contact with a respective side of an exchange coupling control layer. Final Act. 3; Matsumoto ¶¶ 29, 30, 33, 40. The Examiner found Matsumoto discloses the soft magnetic layer on the nonmagnetic substrate side can contain 86–100 at. % of a cobalt and iron (CoFe) magnetic material while the soft magnetic layer on the recording layer side can contain 60–85 at. % of a CoFe magnetic material. Final Act. 3; Matsumoto ¶ 29. That is, the Examiner found that Matsumoto teaches one soft magnetic layer as having more magnetic material than the other, as claimed, and determined Matsumoto's soft magnetic layers possessed the

claimed higher relative permeability characteristic frequency.[2] Thus, the Examiner found Matsumoto anticipates the subject matter of independent claim 1. Final Act. 3–5.

Appellant argues Matsumoto's SUL does not inherently possess the relative permeability characteristic frequencies of the claimed SUL because the Matsumoto embodiment relied upon by the Examiner has an SUL structure different from the claimed SUL structure. App. Br. 4–8; Matsumoto ¶¶ 29–30. According to Appellant, Matsumoto teaches away from the claimed structure by disclosing it is desirable to use a laminated structure in at least the portion of the SUL above the nonmagnetic layer when using an exchange control layer. App. Br. 4–5; Matsumoto ¶ 30. Thus, Appellant argues that Matsumoto's disclosed structure is considerably different from the claimed structure and, as a result, cannot be presumed to inherently have the same physical characteristics. App. Br. 4, 6.

We find these arguments unavailing for the reasons provided by the Examiner. Appellant's arguments are, at best, premised on a preferred embodiment disclosed by Matsumoto. Matsumoto ¶ 30. It is well settled that a reference may be relied upon for all that it discloses, including non-preferred embodiments. *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) ("all disclosures of the prior art, including unpreferred embodiments, must be considered") (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)). The disclosed examples and preferred embodiments do

[2] The Specification associates the relative permeability characteristic frequencies of the respective soft magnetic layers, in part, to the content of magnetic material contained in these layers. Spec. 11–12.

not constitute a teaching away from a broader disclosure or non-preferred embodiments. *In re Susi*, 440 F.2d 442, 446 n.3 (CCPA 1971).

As noted by the Examiner, Matsumoto discloses insertion of a nonmagnetic layer in the SUL to couple upper and lower soft magnetic layers. Final Act. 3; Ans. 5; Matsumoto ¶ 30. While Matsumoto describes desirable embodiments for soft magnetic layers to be used in conjunction with a nonmagnetic layer (Matsumoto ¶ 30), Appellant has directed us to no portion of Matsumoto that contravenes the broader disclosure of the reference. Thus, Appellant has not distinguished the claimed magnetic recording medium from the magnetic recording medium described by Matsumoto.

Claim 5

Claim 5 recites the specific content of magnetic material for the two soft magnetic layers as volume percentages.

As noted above, the Examiner found Matsumoto discloses the soft magnetic layer on the nonmagnetic substrate side can contain 86–100 at. % of a CoFe magnetic material while the soft magnetic layer on the recording layer side can contain 60–85 at. % of a CoFe magnetic material. Final Act. 3; Matsumoto ¶ 29.

Appellant argues Matsumoto does not teach or suggest the claimed compositions for the respective soft magnetic layers and that the Examiner's contention that Matsumoto's atomic percentages meet the claimed volume percentages is unsupported by evidence. App. Br. 8.

We are unpersuaded by these arguments as well. The Examiner reasoned that Matsumoto's proportion of the CoFe magnetic material in the soft magnetic layer on the nonmagnetic substrate side is 85 at. % or more meets the higher end of the claimed proportion of 82.5 vol. % or more as a value of 100 at. % reads into 100 vol. %. Ans. 8–9. The Examiner also reasons, for the soft magnetic layer on the magnetic recording layer side, a low value of 60 at. % will read upon the claimed less than 82.5 vol. %. *Id.* at 9. The Examiner's position in the Answer is unchallenged by Appellant.[3] *See* Reply Brief, *generally*.[4]

---

[3] In any event, Ames Laboratory provides an Excel spreadsheet ("Vol. %" tab of Excel 2008 version) that converts volume percent to atomic percent available for downloading at https://www.ameslab.gov/mpc/FAQ#convertatom. This spreadsheet shows that the volume percent for iron (Fe) and cobalt (Co) are essentially of the same magnitude as the atomic percent (iron: 20 vol. %=21.47 at. %; Co: 13 vol. %=14.97 at. %). Based on this, it appears that the Examiner is factually correct that the atomic percentages for the magnetic material in Matsumoto meet the claimed volume percentages for the same material.

[4] In the Reply Brief, Appellant argues the Examiner relied on two additional references not of record (Nolan (US 2011/0043939 A1, published February 24, 2011) and Zhou (US No. 2007/0217074 A1, published September 20, 2007)) in responding to the Appeal Brief without affording Appellant an opportunity to address these references in the context of the rejection presented by the Examiner. Reply Br. 4. The Examiner relied upon these references as evidentiary references in rebuttal to Appellant's arguments concerning the magnetic moments of the upper and lower soft magnetic layers. App. Br. 8; Ans. 8. We note, however, that Appellant subsequently addressed these additional references in the Reply Brief by stating that they do not support the Examiner's rejection. Reply Br. 4–5. That is, Appellant relied on the Reply Brief for an opportunity to address the additionally cited references.

Accordingly we affirm the Examiner's rejections of claims 1–5 under 35 U.S.C. § 102 (b) for the reasons presented by the Examiner and given above.

Prior Art Rejection under 35 U.S.C. § 103(a)

Because anticipation is the epitome of obviousness, we also sustain the Examiner's prior art rejections under 35 U.S.C. § 103. *See In re Baxter Travenol Laboratories*, 952 F.2d 388, 391 (Fed. Cir. 1991); *In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982). Furthermore, to the extent one may need to select the appropriate layers and ranges, the obviousness rejection is well founded.

ORDER

The Examiner's prior art rejections of claims 1–5 under 35 U.S.C. §§ 102(b) and 103(a) are affirmed.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED